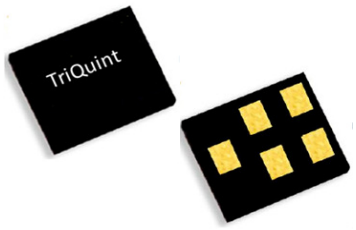
885128

2.4 GHz WLAN/BT LTE Co-Existence Filter

Applications

- WiFi bandpass filter that enables the coexistence of (LTE/TD-LTE) & Wi-Fi
- Portable Hotspots
- Wi-Fi Routers and LTE Gateways
- Smart Meters
- Wi-Fi Access Points
- Small Cells



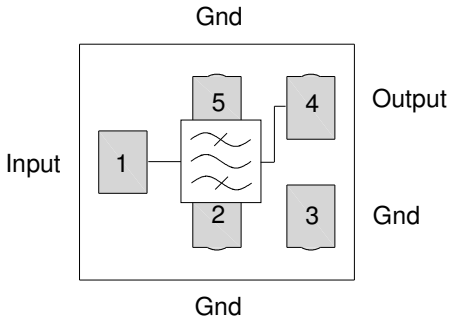
1.1 x 0.9 x 0.50 mm

Product Features

- Low Loss in WLAN band with extended upper corner for inclusion of Bluetooth
- High Rejection in B30/B38/B7/B41 bands
- Industry leading small size: 1.1 x 0.9 x 0.5 mm
- Performance over –40 to +95 ºC
- Single Ended operation
- RoHS compliant, Pb-free module package

Functional Block Diagram

Top View



General Description

The 885128 is a high-performance, high power Bulk Acoustic Wave (BAW) band-pass filter with extremely steep skirts, simultaneously exhibiting low loss in the WiFi band and high near-in rejection in the approximate LTE bands.

885128 is specifically designed to enable coexistence of WiFi and LTE signals within the same device or in close proximity to one another.

The 885128 uses common module packaging techniques to achieve the industry leading size 1.1 x 0.9 x 0.50 mm footprint. The filter exhibits excellent power handling capabilities.

Pin Configuration – Single Ended

Pin No.	Label
1	Input
4	Output
2,3,5	Function label

Note:

1. Pin 1 must be used for input. The large signal performance of this filter (power handling and nonlinear response) is not symmetric

Ordering Information

Part No.	Description
885128	Packaged Part
885128-EVB	Evaluation board

Standard T/R size = 15,000 units/reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature (1)	–40 to +105 °C
RF Input Power (2)	+36 dBm

Notes:
1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Max CW signal applied for up to 500ms with no damage. Pin 1 must be used for input. The large signal performance of this filter (power handling and nonlinear response) is not symmetric.

Electrical Specifications (1)

Test conditions unless otherwise noted: (2) –30 °C to +85 °C

Parameter (3)	Conditions (4)	Min	Typ (5)	Max	Units
Insertion Loss (6)	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	1.5	1.7	dB
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	1.3	1.5	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	1.1	1.4	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)(19 MHz sliding window)	-	1.3	1.5	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	1.3	1.6	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	1.5	1.9	
Passband Ripple	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	0.9	1.4	dB p-p
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	0.7	0.9	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	0.7	1.1	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	0.5	1.2	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	0.9	2.0	
Rejection	925 – 960 MHz	32	33	-	dB
	1559 – 1606 MHz	32	33	-	
	2110 – 2170 MHz	42	47	-	
	2300 – 2370 MHz (7)	33	39	-	
	2500 – 2505 MHz (+25 to +85˚C) (7)	31	38	-	
	2500 – 2505 MHz (–30 to +25˚C) (7)	23	38	-	
	2505 – 2570 MHz (+25 to +85˚C) (7)	44	50	-	
	2505 – 2570 MHz (–30 to +25˚C) (7)	41	50	-	
	2570 – 2620 MHz (7)	47	50	-	
	2620 – 2690 MHz (7)	45	49	-	
	4800 – 5000 MHz	27	33	-	
	7200 – 7500 MHz	27	31	-	
Input /Output VSWR	2402.5 – 2481.5 MHz	-	1.6	2.0	-
RF Input Power (8)	2400 – 2483 MHz	-	24	-	dBm
Source Impedance (9)	(single-ended)	-	50	-	Ω
Load Impedance (9)	(single-ended)	-	50	-	Ω

Notes:
1. All specifications are based on the TriQuint schematic shown on page 5.
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances.
4. An external impedance matching network with ±2% tolerance will be necessary to achieve the stated specifications.
5. Typical values are based on average measurements at room temperature.
6. Data is the integrated value of the linear s-parameter over a 19 MHz range in the indicated band at the specified temperature.
7. Data is the integrated value of the linear s-parameter over 5MHz range at the specified temperature.
8. Input power applied for a minimum of 5,000 hrs. at 55 °C in the frequency band specified.
9. This is the optimum impedance in order to achieve the performance shown.

Electrical Specifications [1]

Test conditions unless otherwise noted: [2] –40 °C to +95 °C

Parameter [3]	Conditions [4]	Min	Typ [5]	Max	Units
Insertion Loss [6]	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	1.5	1.7	dB
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	1.3	1.5	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	1.1	1.3	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)(19 MHz sliding window)	-	1.3	1.6	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	1.3	1.7	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	1.5	2.0	
Passband Ripple	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	0.9	1.5	dB p-p
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	0.7	0.9	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	0.7	1.1	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	0.5	1.2	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	0.9	2.1	
Rejection	925 – 960 MHz	32	33	-	dB
	1559 – 1606 MHz	32	33	-	
	2110 – 2170 MHz	42	47	-	
	2300 – 2370 MHz [7]	33	39	-	
	2500 – 2505 MHz (+25 to +95˚C) [7]	31	38	-	
	2500 – 2505 MHz (–40 to +25˚C) [7]	22	38	-	
	2505 – 2570 MHz (+25 to +95˚C) [7]	44	50	-	
	2505 – 2570 MHz (–40 to +25˚C) [7]	39	50	-	
	2570 – 2620 MHz [7]	47	50	-	
	2620 – 2690 MHz [7]	45	49	-	
	4800 – 5000 MHz	27	33	-	
	7200 – 7500 MHz	27	31	-	
Input /Output VSWR	2402.5 – 2481.5 MHz	-	1.6	2.0	-
RF Input Power [8]	2400 – 2483 MHz	-	24	-	dBm
Source Impedance [9]	(single-ended)	-	50	-	Ω
Load Impedance [9]	(single-ended)	-	50	-	Ω

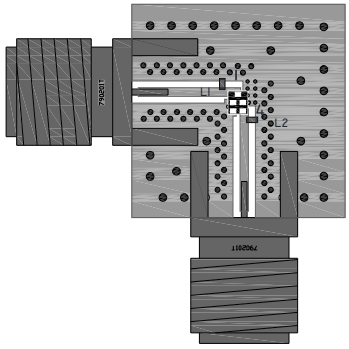
Notes:
1. All specifications are based on the TriQuint schematic shown on page 5.
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances.
4. An external impedance matching network with ±2 % tolerance will be necessary to achieve the stated specifications.
5. Typical values are based on average measurements at room temperature.
6. Data is the integrated value of the linear s-parameter over a 19 MHz range in the indicated band at the specified temperature.
7. Data is the integrated value of the linear s-parameter over 5MHz range at the specified temperature.
8. Input power applied for a minimum of 5,000 hrs. at 55 °C in the frequency band specified.
9. This is the optimum impedance in order to achieve the performance shown.

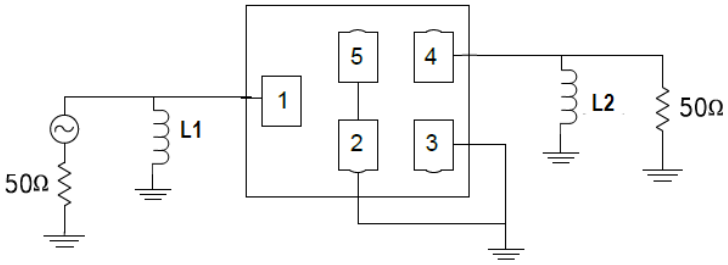
Electrical Specifications [1]

Parameter [3]	Conditions [4]	Min	Typ [5]	Max	Units
Test conditions unless otherwise noted: [2] 0 ºC to +70 ºC					
Insertion Loss [6]	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	1.5	1.6	dB
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	1.3	1.3	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	1.1	1.2	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)(19 MHz sliding window)	-	1.3	1.3	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	1.3	1.6	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	1.5	1.7	
Passband Ripple	2402.5 – 2421.5 MHz (WiFi Ch.1)	-	0.9	1.2	dB p-p
	2407.5 – 2426.5 MHz (WiFi Ch.2)	-	0.7	0.9	
	2412.5 – 2471.5 MHz (WiFi Ch.3-11)	-	0.7	0.9	
	2457.5 – 2476.5 MHz (WiFi Ch.12)	-	0.5	0.9	
	2462.5 – 2481.5 MHz (WiFi Ch.13)	-	0.9	1.6	
Rejection	925 – 960 MHz	32	33	-	dB
	1559 – 1606 MHz	32	33	-	
	2110 – 2170 MHz	43	47	-	
	2300 – 2370 MHz [7]	33	39	-	
	2500 – 2505 MHz (+25 to +70˚C) [7]	31	38	-	
	2500 – 2505 MHz (0 to +25˚C) [7]	26	38	-	
	2505 – 2570 MHz (+25 to +70˚C) [7]	44	50	-	
	2505 – 2570 MHz (0 to +25˚C) [7]	44	50	-	
	2570 – 2620 MHz [7]	47	50	-	
	2620 – 2690 MHz [7]	46	49	-	
	4800 – 5000 MHz	27	33	-	
	7200 – 7500 MHz	27	31	-	
Input /Output VSWR	2402.5 – 2481.5 MHz	-	1.6	1.9	-
RF Input Power [8]	2400 – 2483 MHz	-	24	-	dBm
Source Impedance [9]	(single-ended)	-	50	-	Ω
Load Impedance [9]	(single-ended)	-	50	-	Ω

Notes:
1. All specifications are based on the TriQuint schematic shown on page 5.
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances.
4. An external impedance matching network with ±2 % tolerance will be necessary to achieve the stated specifications.
5. Typical values are based on average measurements at room temperature.
6. Data is the integrated value of the linear s-parameter over a 19 MHz range in the indicated band at the specified temperature.
7. Data is the integrated value of the linear s-parameter over 5MHz range at the specified temperature.
8. Input power applied for a minimum of 5,000 hrs. at 55 ºC in the frequency band specified.
9. This is the optimum impedance in order to achieve the performance shown.

Evaluation Board





Notes:

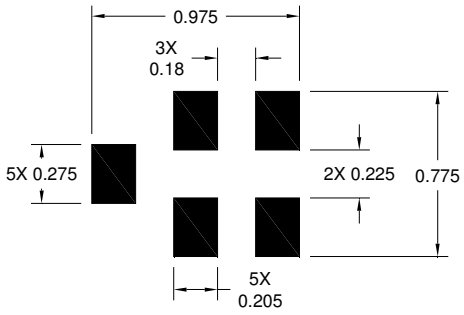
1. Matching component values shown are for the specified TriQuint evaluation board. Value adjustment may be required in end user product circuits depending on component manufacturer and PCB material.
2. Top, middle & bottom layers: 1/2 oz copper, Substrates: FR4 dielectric, .062" thick, Finish plating: Nickel: 3-8 µm thick, Gold: .03-.2 µm thick, Hole plating: Copper min .0008 µm thick

Contact TriQuint for Gerber files

Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	2.4 GHz WLAN/BT filter	TriQuint	885128
L1	10 nH	Chip Inductor, 0201, ± 2 %	Murata	LQP03TH10NH02D
L2	10 nH	Chip Inductor, 0201, ± 2 %	Murata	LQP03TH10NH02D
SMA	N/A	SMA connector	Radiall	9602-1111-018
PCB	n/a	3 Layer	Multiple	TBD

PCB Mounting Pattern



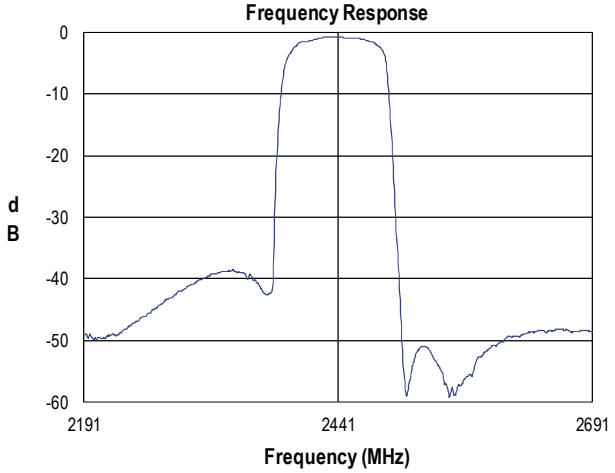
Notes:

1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

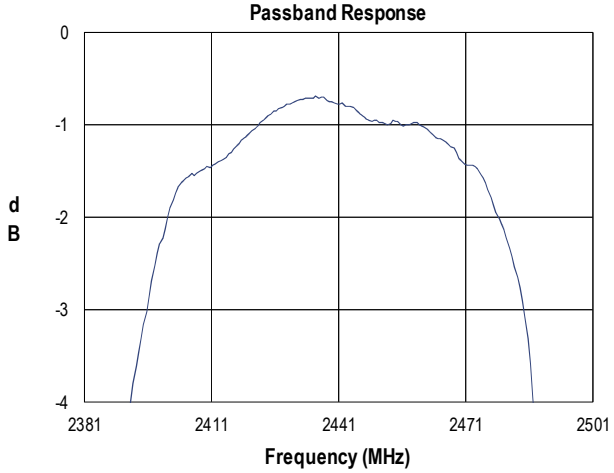
Performance Plots

Test conditions unless otherwise noted: Temp= +25 ℃

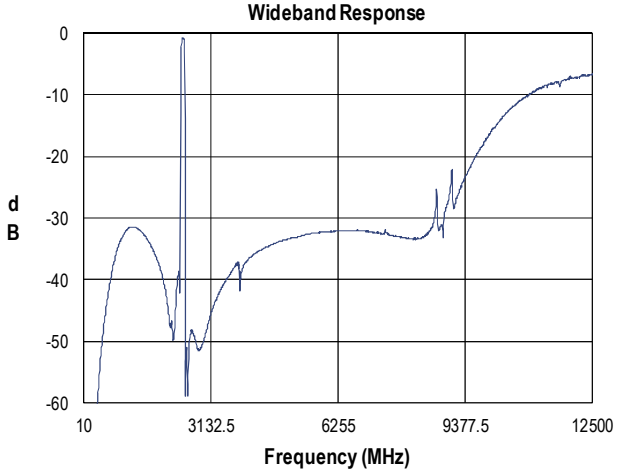
Frequency Response



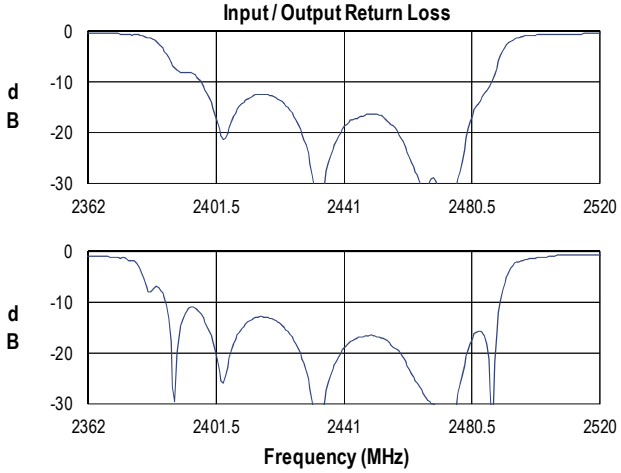
Passband Response



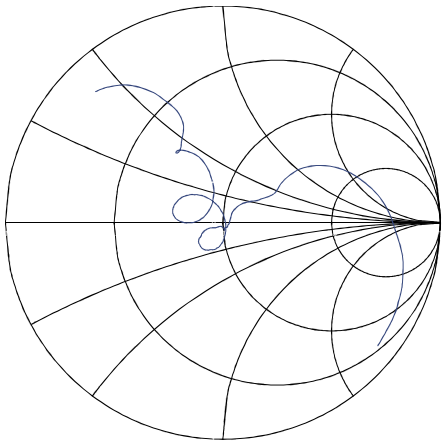
Wideband Response



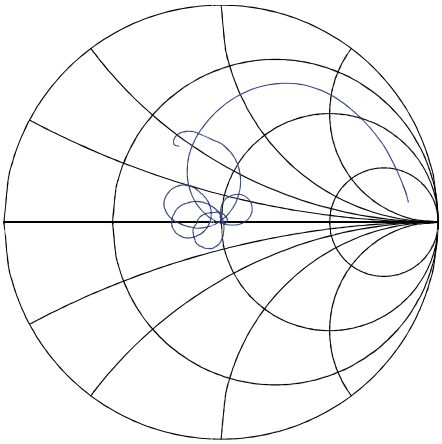
Input / Output Return Loss



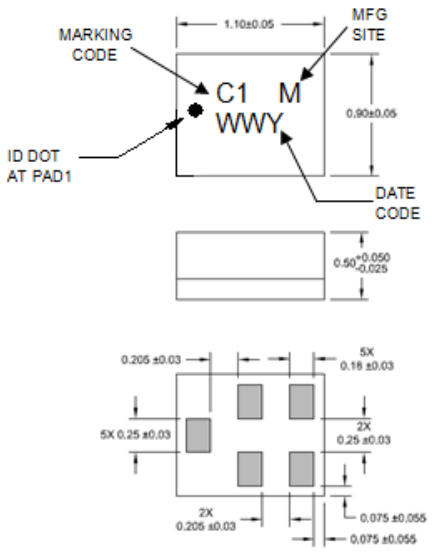
Input Smith Chart



Output Smith Chart



Package Information, Marking and Dimensions



Package Style: CSP
Dimensions: 1.1 x 0.9 x 0.50 mm

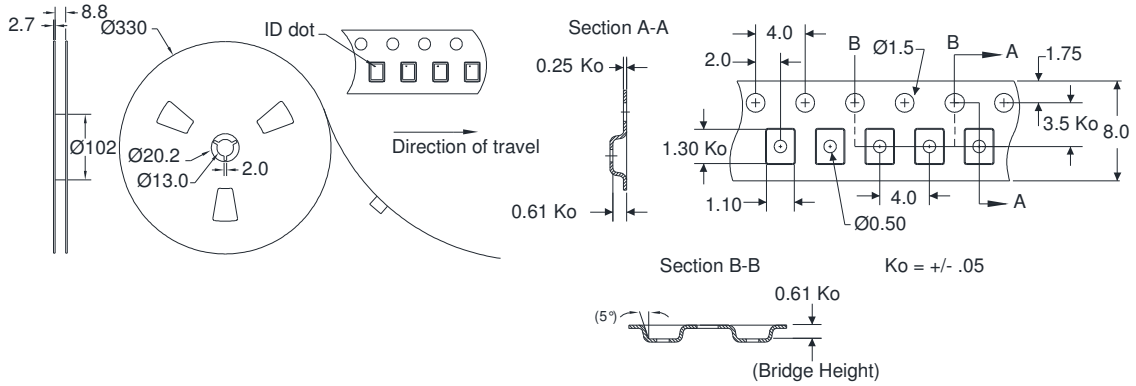
Package for Surface Mount Technology
Terminations: *Au* plating 0.5 - 1.0µm, over a 2- 6µm *Ni* Plating
Approximate weight 1.37mg

Marking Code uniquely identifies Part Number
M = Manufacturing site (Blank for Apopka, C for Costa Rica)
Date code consists of:
WW = 2 digit week,
Y = last digit of year

An asterisk (*) in front of the marking code indicates prototype.
All dimensions shown are nominal in millimeters
.

Tape and Reel information

Standard T/R size = 15,000 units/reel. All dimensions are in millimeters



Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Class: TBD
Test: Human Body Model (HBM)
Standard: JEDEC JS-001

ESD Class: TBD
Test: Charge Device Model (CDM)
Standard: JEDEC JES-002

MSL Rating

MSL Rating: Level 3.
Test: 260 °C convection reflow
Standard: JEDEC Standard IPC/JEDEC J-STD-020

Solderability

Compatible with both lead-free (260°C maximum reflow temperature) and tin/lead (245°C maximum reflow temperature) soldering processes.

Refer to **Soldering Profile** for recommended guidelines.

RoHs Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web: www.triquint.com **Tel: 877-800-8584**
Email: customer.support@qorvo.com

For information about the merger of RFMD and TriQuint as Qorvo:

Web: www.qorvo.com

For technical questions and application information: **Email:** flapplication.engineering@tqs.com

Important Notice

The information contained herein is believed to be reliable. TriQuint makes no warranties regarding the information contained herein. TriQuint assumes no responsibility or liability whatsoever for any of the information contained herein. TriQuint assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for TriQuint products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

TriQuint products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.